CLAIMS

1.   A control system, comprising an energy measurement portion, a plurality of control portions, at least one comparison portion, and at least one judgment portion,

5   wherein the energy measurement portion sends to the judgment portion energy information relating to energy consumed by the control portions,

the comparison portion sends to the judgment portion a comparison result in which observation information of an arbitrary position and target information are compared,

10   the judgment portion carries out a judgment as to whether a predetermined condition is met, based on the energy information and the comparison result, and sends a result of the judgment to the control portions, and

the control portions repetitively increase/decrease a control amount based on the judgment result obtained from the judgment portion, and, when the energy

15   consumption has increased or has not decreased as a result of the increase/decrease of the control amount, cause the observation information to approach the target information by returning the control amount to a previous value.

20   2.   A control system, comprising an energy measurement portion, a plurality of control portions, at least one comparison portion, and at least one judgment portion,

wherein the energy measurement portion sends to the judgment portion energy information relating to energy consumed by the control portions,

25   the comparison portion sends to the judgment portion a comparison result

in which observation information of an arbitrary position and target information are compared,

the judgment portion carries out a judgment as to whether a predetermined condition is met, based on the energy information and the comparison result, and sends a result of the judgment to the control portions,

the comparison portion sends the comparison result without specifying a destination when sending the result to the judgment portion, and/or the judgment portion sends the judgment result without specifying a destination when sending the result to the control portions, and

the control portions repetitively increase/decrease a control amount based on the judgment result obtained from the judgment portion, and, when the energy consumption has increased or has not decreased as a result of the increase/decrease of the control amount, cause the observation information to approach the target information by returning the control amount to a previous value.

3. A control system, comprising an energy measurement portion, a plurality of control portions, at least one comparison portion, and at least one judgment portion,

wherein the energy measurement portion sends to the judgment portion energy information relating to an amount of energy consumed by the control portions,

the comparison portion includes a sampling portion that samples observation information and a storage portion that has target information, and sends to the judgment portion a comparison result in which the observation

information and the target information are compared,

the judgment portion carries out a judgment as to whether a predetermined condition is met, based on the energy information and the comparison result, and sends a result of the judgment to the control portions,

5   the control portions are capable of carrying out, based on the judgment result, variation control in which a current control value is changed by a predetermined variation amount, and return control,

the observation information is generated based on control values controlled by the plurality of control potions,

10   the control portions carry out the variation control through at least one of: setting of the predetermined variation amount as an amount that is varied randomly; setting of a return variation amount in the return control as an amount that is varied randomly; random changing of a timing for carrying out the variation control; and random changing of the frequency of the variation control,

15   and return the control amount to a previous value when the energy consumption has increased or has not decreased as a result of the change in the control amount, and,

when the judgment is that the predetermined condition is not met after the variation control, the control portions cause the observation information to

20   approach the target information by returning the control amount to a previous value so that the predetermined condition is met.

4.   A control system, comprising an energy measurement portion, a plurality of control portions, at least one comparison portion, and at least one judgment

25   portion,

wherein the energy measurement portion sends to the judgment portion energy information relating to an amount of energy consumed by the control portions,

the comparison portion includes a sampling portion that samples 5 observation information and a storage portion that has target information, and sends to the judgment portion a comparison result in which the observation information and the target information are compared,

the judgment portion carries out a judgment as to whether a predetermined condition is met, based on the energy information and the 10 comparison result, and sends a result of the judgment to the control portions,

the control portions are capable of carrying out, based on the judgment result, variation control in which a current control value is changed by a predetermined variation amount, and return control,

the observation information is generated based on control values 15 controlled by the plurality of control potions,

the control portions carry out the variation control by through at least one of: setting of the predetermined variation amount as an amount that is varied randomly; setting of a return variation amount in the return control as an amount that is varied randomly; random changing of a timing for carrying out the 20 variation control; and random changing of the frequency of the variation control, and return the control amount to a previous value when the energy consumption has increased or has not decreased as a result of the change in the control amount, and,

when the judgment is that the predetermined condition is not met after 25 the variation control, at least a part of the control portions causes the observation

information to approach the target information by carrying out return control so that the predetermined condition is met.

5.   The control system according to any of claims 1 to 4,

5   wherein at least one of the selection of the control portions that increase/decrease the control amount, the magnitude of the increase/decrease of the control amount, and the frequency of the increase/decrease of the control amount is changed.

10   6.   The control system according to any of claims 1 to 5,

wherein when there is a single comparison portion in the control system, the judgment portion judges that the predetermined condition is met when the observation information is in a constant relation with the target information and judges that the predetermined condition is not met when the observation

15   information is not in a constant relation with the target information, and,

when there are at least two comparison portions, the control portions judge that the predetermined condition is met when the observation information are all in a constant relation with the corresponding target information and judges that the predetermined condition is not met when even one is not in a

20   constant relation, and

wherein the constant relation is a relation in which the observation information is larger than the corresponding target information.

7.   The control system according to claim 3 or 4,

25   wherein, when the control values of all the control portions are set to their

respective maximum values or the predetermined condition is not met, before selection of the control portions, the respective control values of all the control portions are changed in a direction of variation in the return control so that the predetermined condition is met.

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8.   The control system according to claim 3 or 4,

wherein all the plurality of control portions carry out the return control.

9.   The control system according to claim 3 or 4,

10   wherein the return variation amount is a return variation amount by which a state before the previous variation control is restored, or an arbitrary variation amount that is returned to a direction reverse to a direction of control in the previous variation control so that the predetermined condition is met.

15   10.   The control system according to any of claims 1 to 9,

wherein the observation information is caused to approach the target information by applying at least one of a sending method in which, when the comparison result is expressed as two values, the comparison portion sends to the judgment portion only one state of the two values as the comparison result and a
20   sending method in which the judgment portion sends to the control portions only one judgment result that the predetermined condition is met or not met.

11.   The control system according to any of claims 1 to 10,

wherein the judgment portion is provided corresponding to each of the
25   plurality of control portions.

12.   The control system according to claim 3 or 4,

wherein at least one of the predetermined variation amount and the return variation amount is a variation amount based on a difference between the observation information and the target information.

13.   The control system according to claim 3 or 4,

wherein at least one of the predetermined variation amount and the return variation amount is set for each of the control portions.

14.   The control system according to claim 3 to 4,

wherein at least one of the predetermined variation amount and the return variation amount is reduced in response to a convergence in which the observation information approaches the target information, or reduced along with a passing of time until the convergence.

15.   The control system according to any of claims 1 to 14,

wherein the number of control portions selected from the control portions to increase/decrease the control amount is caused to approach one in response to a convergence in which the observation information approaches the target information.

16.   The control system according to claim 3 or 4,

wherein at least one of the control value in the variation control and the control value in the return control is varied continuously.

17.   The control system according to any of claims 1 to 16,

wherein at least one of the control value of the plurality of control portions, the observation information and the target information is output to a display.

18.   The control system according to any of claims 1 to 17,

wherein control values of the control portions at a final stage of the convergence can be stored, and the control portions are capable of reproducing the control based on the stored control values by receiving an instruction.

19.   The control system according to any of claims 1 to 18,

wherein a plurality of the comparison portions are provided, and at least one partial judgment portion that obtains a comparison result from a part of the comparison portions to carry out a judgment is provided,

the partial judgment portion carries out the judgment as a partial judgment for the obtained comparison result, and,

when there is any comparison portion that is not judged by the partial judgment portion, the judgment portions adds a comparison result of that comparison portion to the partial judgment result of the partial judgment portion, and carries out the judgment based on the partial judgment result of the partial judgment portion, when there is no comparison portion that is not judged by the partial judgment portion.

20.   The control system according to any of claims 1 to 19,

wherein at lest one of transmission in which the comparison portion sends the comparison result to the judgment portion, transmission in which the partial judgment portion sends the partial judgment result to the judgment portion, and transmission in which the judgment portion sends the judgment result to the

5   control portions is wireless transmission.

21.   The control system according to any of claims 1 to 20,

the control system being used for lighting control,

wherein the control portions are lighting devices, the comparison portion

10   is an illumination comparing device, the judgment portion is a judging device, the control value is a light intensity of light sources of the lighting devices, the observation information is sampled illumination at an observation position, and the target information is a target illumination.

15   22.   A light source constituting the control system according to claim 21.

23.   A lighting device constituting the control system according to claim 21.

24.   An illumination comparing device constituting the control system

20   according to claim 21.

25.   A judgment device constituting the control system according to claim 21.